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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,743	09/29/2003	David Moyer	SPNE0002	4211

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EXAMINER

ROJAS, BERNARD

ART UNIT PAPER NUMBER

2832

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/674,743

Applicant(s)

MOYER ET AL.

Examiner

Bernard Rojas

Art Unit

2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 1-22, 28, 32, 34 and 35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-27, 29-31, 33 and 36-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 23-26, 29-31, 33, 36, 37, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pischinger [US 6,066,999] in view of Yanai [US 6,634,327].

Claim 23, Pischinger discloses a valve system [figure 3], comprising:

a valve assembly [4] linearly movable between a closed position and an open position;

a valve spring [6.1] which is compressed by the valve assembly when the valve assembly is located in the open position, and is uncompressed when the valve assembly is located in the closed position;

a disable spring [6.2] which is compressed by the valve assembly when the valve assembly is located in the closed position, and is uncompressed when the valve assembly is located in the open position;

at least one electromagnet [2.1, 2.2, 3.1, 3.2]

a clapper [4] affixed to the valve assembly and movable in relation to the electromagnet.

means for providing energy [8] to each of at least one of the electromagnets for any of attracting the clapper and repelling the clapper;

wherein the energy means provides energy [to braking coils 3.2 and 3.2] to decrease a local magnetic flux to repel the clapper and provide a soft landing at any of the closed position and the open position [col. 2 lines 10-36].

Pischinger fails to teach the use of permanent magnet to latch the clapper in any of the closed position and the open position.

Yanai discloses a valve system [figure 1], comprising a valve assembly [4] linearly movable between a closed position and an open position; with a valve spring [14] and a disable spring [24], at least one electromagnet [30], at least one permanent magnet [38m, 36m] and a clapper [34] affixed to the valve assembly and movable in relation to the electromagnet and the permanent magnet; wherein the magnetic field from at least one of the permanent magnets provides an attractive latching force to the clapper when the valve assembly is in any of the closed position and the open position', and [col. 5 lines 20-35, col. 6 lines 48-55].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the latching permanent magnets of Yanai with the valve assembly of Pischinger in order to create a valve that can be latch in either the open or closed position without the need of an additional coil current [col. 5 lines 20-35].

Claim 24, Pischinger discloses that the means for providing energy to at least one of the electromagnets is controllable to increase a local magnetic field [col. 6 lines 48-55]

Claim 25, Pischinger discloses the valve system of Claim 23, wherein the means for providing energy to at least one of the electromagnets is controllable to decrease a local magnetic field [col. 6 lines 48-55].

Claim 26, Pischinger discloses the valve system of Claim 23, wherein the energy means is controllable to provide energy to a single of the electromagnets for both attracting the clapper and repelling the clapper during a single movement toward any of the closed position and the open position [col. 5 line 20 to col. 6 line 55].

Claims 29 and 30, Pischinger discloses the claimed valve system with the exception of the composition of the permanent magnet. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a permanent magnet of neodymium or samarium cobalt in order to increase the magnetic force of the magnet while reducing its size.

Claim 31, Pischinger discloses the claimed valve system with the valve spring being isolated from the valve at the closed position and the disable spring being isolated from the valve at the open position [figure 3].

Claim 33, Yanai discloses the valve system of Claim 23, wherein both a north pole of said permanent magnet and a south pole of said permanent magnet are used to attract or repel said electromagnet [col. 4 line 60 to col. 5 line 38].

Claim 36 Pischinger discloses the claimed valve system with the exception of the valve spring and the disable spring each have a different rate of compression. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use springs with different rates of compression in order to change the operating characteristics of the clapper such as the bias and the response time.

Claim 37, Pischinger discloses the valve system of Claim 23, further comprising: an electromagnet core [A, B].

Claim 40, Pischinger discloses the claimed valve system with the exception of wherein the valve spring and the disable spring have different lengths. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use springs of different length in order to change the operating characteristics of the clapper such as the neutral position and the response time.

Claim 41, Pischinger discloses the claimed valve system with the exception of wherein the valve spring and the disable spring have different masses. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use springs of different mass in order to change the operating characteristics of the clapper such as the spring constant, the actuation energy required and the response time.

Claims 23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pischinger [US 6,066,999] in view of Lequesne [US 4,829,947].

Claim 23 and 27, Pischinger discloses a valve system [figure 3], comprising:

a valve assembly [4] linearly movable between a closed position and an open position;

a valve spring [6.1] which is compressed by the valve assembly when the valve assembly is located in the open position, and is uncompressed when the valve assembly is located in the closed position;

a disable spring [6.2] which is compressed by the valve assembly when the valve assembly is located in the closed position, and is uncompressed when the valve assembly is located in the open position;

at least one electromagnet [2.1, 2.2, 3.1, 3.2]

a clapper [4] affixed to the valve assembly and movable in relation to the electromagnet.

means for providing energy [8] to each of at least one of the electromagnets for any of attracting the clapper and repelling the clapper;

wherein the energy means provides energy [to braking coils 3.2 and 3.2] to decrease a local magnetic flux to repel the clapper and provide a soft landing at any of the closed position and the open position [col. 2 lines 10-36].

Pischinger fails to teach the use of permanent magnet to latch the clapper in any of the closed position and the open position.

Lequesne discloses a valve system with a single permanent magnet that provides the attractive latching force to the clapper when the valve assembly is in any of the closed position and the open position [a permanent magnet clapper].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a magnet armature in order to generate strong repulsion forces at the beginning of the armature motion [col. 1 lines 49-51].

Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pischinger [US 6,066,999] in view of Yanai [US 6,634,327], as applied to claim 23 above, in view of Smith et al. [US 6,798,323].

Claim 38, Pischinger in view of Yanai discloses the claimed valve system with the exception of the clapper being made of using a laminated core.

Smith et al. discloses an electromagnet with a laminated core [abs].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the laminated core of Smith et al. in the valve system of Pischinger and of Yanai in order to reduce eddy currents in the core.

Claim 39, Pischinger in view of Yanai discloses the claimed valve system with the exception of the clapper being made of using a laminated clapper.

Smith discloses an electromagnet with a laminated armature [clapper] [abs].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the laminated armature [clapper] of Smith in the valve system of Pischinger and Yanai in order to reduce eddy currents in the armature.

### ***Response to Arguments***

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.



### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Rojas whose telephone number is (571) 272-1998. The examiner can normally be reached on M-F 8-4:00, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2832

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Bernard Ryan*  
Br

*SEP*  
SP6 - AM 2832  
5/26/05